

REMARKS

Claims 28-44, 46 and 28-54 are all the claims pending in the application.

I. Response to Claim Rejection - 35 USC § 103

A. Gelinas et al in view of Akatsuka et al

Claims 28-44, 46, and 48-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gelinas et al. (US 5,108,766) in view of Akatsuka et al. (US 4,093,748)

Applicants traverse the rejection for the reasons of record and additionally in view of the following. The present invention relates to a dry flavour enhancing agent which comprises yeast extract and acid fermented flour.

It was known in the art to use acid fermented flour as an aromatic agent. However, this use was limited to a certain type of baked product. Acid fermented flour is only used for preparing baked products having a pronounced acid taste and odour, and "toasted" type aromatic notes (page 2, lines 13-16). Acid fermented flour, when used as an aromatic agent, gives a very distinctive taste, which is not suitable to any type of baked product. For example, it cannot be used for making French bread. On the other hand, it is entirely appropriate for making sourdough bread, which has a very unique flavour (Gelinas, et al., col. 1, line 32), where acidity predominates (Atkatsuka et al., col. 1, lines 34-39).

The use of yeast extracts as a flavour enhancer in food was also known in the art. However, this use was limited to a certain type of products, although not the same as for acid fermented flour. Yeast extracts were known to give a cheesy, meaty or savoury flavour to foods in general (Sukan and Weerasinghe, p. 15, lines 1-2, In Process and Reaction Flavors, Weerasinghe et al., ACS Symposium Series, American Chemical Society, Washington DC,

2005, (Attached)). More specifically, yeast extracts give "cheese crackers" aromas to bakery products (page 2, lines 26-32).

At the time of the present invention, it was thus thought that acid fermented flour and yeast extracts were mutually incompatible. It was thought that the flavours obtained with these ingredients were each at one end of the aroma spectrum. The skilled person would thus never have combined these two ingredients because of their strong, distinctive characters. One of them, the acid fermented flour, gives a pronounced acid taste, while the other leads to strong cheesy or meaty flavours.

What was then not appreciated, though, was that the combination in a flavour enhancing agent of acid fermented flour and a yeast extract would give rise to unexpected organoleptic synergetic effects (page 3, lines 11-16). At the time of the present invention, the skilled person would thus use acid fermented flour for preparing sourdough bread, just as in Gelinas, et al., and yeast extract for preparing white bread, as in Atkatsuka. However, the skilled person would never have used acid fermented flour for preparing white bread or yeast extract for making sourdough. The skilled person would have thought, rather, that, for example, the incorporation of in sourdough would have given to the resulting bread a strong, undesirable cheesy, "cracker" aroma, instead of the slightly acidic taste which was sought for the said bread.

By contrast, the inventors have found, surprisingly, that the acid fermented flour and yeast extract could be used in combination to make a whole range of bakery products with unexpected organoleptic properties. This is where the inventive contribution of the present inventors lies. While no one would have thought of combining the two ingredients in a dry agent to amplify the flavours of the bread.

The Examiner considers that the skilled person would have been able to obtain the invention by combining the teachings of Gelinas, et al. and Atkatsuka. However, Applicants respectfully disagree.

Gelinas, et al. teaches that sourdough bread has a very unique flavour (col. 1, line 32). The traditional process of making this bread is a multistage process, which has a number of deficiencies (col. 1, lines 45-47). Different approaches have been tested to modify the sourdough process, but none is really satisfying (col. 1, line 48 - col. 2, line 15).

Atkatsuka aims at providing a new flavorant which can be used for making bakery products (Gelinas, et al., col. 2, line 20-22; claim 1), and especially for making a sourdough bread (Gelinas, et al., col. 2, lines 26-38).

This flavorant is obtained by fermenting milk or a milk derivative with at least one heterofermentative bacteria culture of the genus *Lactobacillus* (Atkatsuka, col. 2, lines 33-47; col. 3, lines 31-43; claim 1). Applicants emphasize that in the most general description of the invention of Gelinas, et al., there is no mention of flour. The flavorant is produced solely by fermenting milk or a milk derivative.

Flour can be optionally added to the mixture of milk, water and bacteria before fermentation: "The mixture may be enriched by adding flour." (Gelinas, et al., col. 3, line 46). However, Gelinas, et al. then adds that flour is not mandatory but it yields a higher degree of acidity in the flavorant (col. 3, lines 46-47; Table 1). Thus Gelinas, et al. teaches that flour should be added to the mixture only when acidity is sought. This is confirmed in Gelinas, et al., col. 4, lines 20-27: "(o)ne of the main characteristics of this invention is to permit as much acidification of the dairy medium as possible without producing off-flavors. The use of a

particular flour type may act as a buffer to permit higher acidification an aroma compounds production considering that it modifies the nutritional composition of the growth medium."

Gelinas, et al. therefore discloses a flavorant which is not based on acid fermented flour, but on a fermented dairy in which flour can be added. Indeed, throughout Gelinas, et al., the flavorant is referred to as a fermented dairy product, not as fermented flour. Moreover, Gelinas, et al., explicitly states that the flavorant solely by fermenting milk possesses a satisfactory range of concentrated flavour compounds and acids and is virtually free of off flavours (Gelinas, et al., col. 2, lines 45-47).

The person of skills in the art would therefore have understood that the flavour exhausting ability of the flavorant of Gelinas, et al. is attributable to the fermented milk, whereas the presence of flour only helps to reach higher acidity. There would thus have been no indication in Gelinas, et al., to the said skilled person that acid fermented flour could be used as a flavorant *per se*. Even if it was the case, it would only have disclosed that acid fermented flour gives acidity, and would thus have done nothing to dispel the skilled person's prevention regarding the possibility to combine the flavours produced by the acid fermented flour on the one hand, and the yeast extract on the other hand.

Atkatsuka discloses a process to improve the taste of the bread. This process comprises a step of adding a white egg hydrolysate, a yeast extract to wheat flour (col. 1, lines 4- 10, lines 21-26). This process aims at reducing the period of time for the preparation of bread and at improving the quality of bread.

The process of the invention of Atkatsuka is applied to the preparation of bread by dough fermentation (Atkatsuka, col. 1, lines 42-43). Thus the process allows for the preparation of white bread, French rolls; sweet goods, such as jam buns, cream buns, beamjam buns, and other

bread such as fruit breads, continental breads, Danish pastries, a fermented doughnut and the like (Atkatsuka, col. 1, lines 45-50). Absent from this list are sourdough and related breads, which have a unique, distinctive, acid taste. Rather the breads listed are known to have aromas which are compatible with the cheesy flavours resulting from yeast extract. There is no indication in Atkatsuka that yeast extract could be used in combination with acid fermented flour. Nothing in Atkatsuka would have suggested to the skilled person that the acidulated taste produced by acid fermented flour and the strong, cheesy flavour created by yeast extract could be used together.

Atkatsuka discloses that yeast extract and white egg hydrolysate are added, in liquid form, directly into the dough. On the other hand, the present invention discloses that yeast extract is used in combination with acid fermented flour in a dry flavouring agent. The Examiner argues that Atkatsuka is a teaching reference and therefore does not have to disclose the same concepts as Gelinas, et al. In particular, since, according to the Examiner, Gelinas, et al. teaches that the flavouring agent can be dried for storage purposes, the Examiner argues that Atkatsuka does not have to disclose the dryness of the yeast extract. However, it is clear that if the yeast extract is added in liquid form to dry acid fermented flour, the result will be a flavouring agent in solution, not a dry flavouring agent. Therefore the disclosure of Atkatsuka would not have led the skilled person to a dry flavouring agent, even when combined with the teaching of Gelinas, et al.

The instant invention presents the added advantage of permitting a reduction of the added salt in the bread. The inventors have found that the dry flavouring agent of the invention also gives a salty taste to the resulting bakery product, which thus does not as much salt as the bakery products of the prior art.

Atkatsuka discloses the use of 2 % salt while the present claims require 1.8 % salt. The Examiner argues that the difference is "slight" and that it would have been obvious to one of ordinary skills in the art that the amount of 1.8 % is but an obvious variant of the amounts disclosed in Atkatsuka.

We respectfully disagree with this opinion. The difference between 1.8 % and 2 % is not "slight": it corresponds to a 10 % difference between the two amounts. In order to obtain such a result, at least 10 % more yeast extract would have to be added to the dry flavouring agent, resulting in an even stronger meaty and cheesy taste. Therefore, the skilled person would have been even less inclined than before to combine yeast extract with dry acid fermented flour, which is known to give a pronounced acid taste.

Regarding claim 52, Atkatsuka specifically discloses that the yeast extract is obtained by breaking the cell wall of other varieties than the baker's yeasts (*Saccharomyces cerevisiae*) to be used for the preparation of bread (Atkatsuka, col. 1, lines 51-55). Thus, Atkatsuka explicitly leads the skilled person away from using extracts obtained from *Saccharomyces cerevisiae*. By contrast, the present invention recommends using *Saccharomyces cerevisiae* (page 4, lines 21-22).

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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